O|M|P
www.molluscan.com/omp

Occasional Molluscan Papers

Publishing on Malacology in the Sundaland Region

http://zoobank.org/urn:lsid:zoobank.org:pub:07468838-5A16-4973-92D6-B7D14E5B0C86

ISSN 1793-8716 (online)
ISSN 1793-8708 (print)
Volume 3: 1–3
Date of publication:
6 December 2014

Communication

On a pearl in *Tegillarca granosa* (Linnaeus, 1758) (Bivalvia: Arcidae)

S. K. Tan[1,2,4] & Ron K. H. Yeo[3]

[1]*Lee Kong Chian Natural History Museum*
(formerly the Raffles Museum of Biodiversity Research),
National University of Singapore, Block S6,
Science Drive 2, #03-01,
Singapore 117546, Republic of Singapore
[2]*nhmtsk@nus.edu.sg*
[3]*ronyeo@gmail.com*
[4]*Corresponding author*

Abstract

A naturally formed pearl is reported for the first time from *Tegillarca granosa*, a commonly available shellfish better known by its misnomer "blood cockle" in Singapore and its neighbouring countries. The cause of pearl formation is not known.

http://zoobank.org/urn:lsid:zoobank.org:pub:1D445E8A-C1C1-448B-B496-2D249D9617D6

Introduction

Tegillarca granosa (Linnaeus, 1758), alternatively represented as *Anadara granosa*, is a shellfish commonly seen in the seafood trade in Singapore and its neighbouring countries. It is a commercially important species extensively cultured in Thailand and Malaysia (Tookwinas, 1983; Broom, 1985). Although not a true cockle of the family Cardiidae, this species is better known in this region as "blood cockle" or locally in Singapore as "hum". This species is also evidently one of the most popularly eaten mollusc species in Singapore, with some 104,854 tonnes imported in 2001 alone (Committee on Epidemic Diseases, 2002).

A pearl was recently discovered in a *Tegillarca granosa* that was purchased from a market in Singapore. As most of the *Tegillarca granosa* sold in the markets of Singapore are imported from Peninsular Malaysia, particularly from the states of Selangor, Penang and Perak (Kechik, 1995; Chua *et al*., 2000; Tan *et al*., 2008), this pearl-bearing specimen is likely to have originated from the Strait of Malacca, where the shellfish is cultured on the extensive mudflats. This short note serves to document the find.

Pearl in *Tegillarca granosa*

The pearl embedded in the mantle of a *Tegillarca granosa* was noticed by the second author (R.K.H. Yeo) while he was preparing the species for consumption on 20th December 2012. Although encapsulated, the pearl was clearly visible within the pearl sac located near the umbonal area. The extracted whitish pearl, measuring 2.35 mm in diameter, is nearly perfectly spherical, porcellaneous and glossy (Fig. 1). The pearl has been deposited and catalogued as a voucher (ZRC.MOL.5410) in the Zoological Reference Collection of the Lee Kong Chian Natural History Museum, in the National University of Singapore.

Discussion

Although the best known commercially valuable pearl producers are without doubt the pteriid pearl oysters and unionid freshwater mussels, any shell-bearing mollusc can theoretically produce pearls. Pearls from members of numerous molluscan families have been reported; thus far including the bivalve families Malleidae, Mytilidae, Ostreidae, Pectinidae, Pinnidae, Placunidae, Tridacnidae (regarded as a subfamily in the Cardiidae by some authors [e.g., Bouchet & Rocroi, 2010; but see Penny & Willan, 2014]), Unionidae, Veneridae, and the gastropod families Cassidae, Fasciolariidae, Haliotidae, Strombidae, Turbinidae, Volutidae (e.g., Bolman, 1941; Shirai, 1994; Bieler *et al*., 2004; Wight, 2004). It is very likely that finds of pearls in many more families and species throughout history remain unreported.

No attempt was made to section the pearl for examination since it is a unique specimen, and the cause of pearl formation in this *Tegillarca granosa* remains unknown. It is widely accepted that formation of natural pearls are triggered by irritants such as a grain of sand or a parasite. There is also recent evidence to suggest that pearls could result from mantle tissue injury alone

To cite this publication:
Tan SK & Yeo RHK (2014) On a pearl in *Tegillarca g*ranosa (Linnaeus, 1758) (Bivalvia: Arcidae). Occasional Molluscan Papers, 3: 1–3.

Fig. 1. The pearl of *Tegillarca granosa* (ZRC.MOL.5410), and a shell here shown for size comparison (shell width 29.3 mm). (Photograph by S.K. Tan).

and encapsulation of a foreign object is not necessary (Taylor & Strack, 2008). Blister pearls caused by boring organisms in the shells of arcids are relatively common (e.g., Mienis, 2000a, 2000b, 2001), but to the best of our knowledge, this is the first report of a 'real' pearl produced by *Tegillarca granosa*.

Acknowledgements

Henk K. Mienis (Tel Aviv University, Israel) kindly provided some literature.

References

Bieler R, Kappner I & Mikkelsen PM (2004) *Perigylpta listeri* (J.E. Gray, 1838) (Bivalvia: Veneridae) in the Western Atlantic: Taxonomy, anatomy, life habits, and distribution. Malacologia, 46(2): 427–458.

Bouchet P & Rocroi J-P (2010) Nomenclator of bivalve families. With a classification of bivalve families by Rüdiger Bieler, Joseph G. Carter and Eugene V. Coan. Malacologia, 52(2): 1–184.

Bolman J (1941) The Mystery of the Pearl. Internationales Archive Für Ethnographie, Supplement 39. E.J. Brill, Leiden, i–xi + 170 pp.

Broom MJ (1985) The biology and culture of marine bivalve molluscs of the genus *Anadara*. ICLARM Studies and Reviews, 12: i–vi + 1–37.

Committee on Epidemic Diseases (2002) A shellfish-borne outbreak of hepatitis A. Epidemiological News Bulletin, Singapore, 28(10): 55–57.

Chua T-E, Gorre IRL, Ross SA, Bernad SR, Gervacio B & Ebarvia MC (2000) The Malacca Straits. Marine Pollution Bulletin, 41(1–6): 160–178.

Kechik I bin A (1995) Aquaculture in Malaysia. *In:* Bagarinao TU & Flores EEC (eds.), Towards Sustainable Aquaculture in Southeast Asia and Japan. Iloilo, Philippines: SEAFDEC Aquaculture Department, pp. 125–135.

Linnaeus C (1758) Systema naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis. Tomus I. Editio Decima, Reformata. Laurentii Salvii, Holmiae, 823 pp.

Mienis HK (2000a) A blister pearl in *Arca noae* Linnaeus, 1758. Of Sea and Shore, 23(3): 175.

Mienis HK (2000b) Blister pearls in *Barbatia decussata*. Pallidula, 30(2): 23.

Mienis HK (2001) Blister pearls in *Arca navicularis* from the Red Sea. Malakológiai Tájékoztató, 19: 93–94.

Penny SS & Willan RC (2014) Description of a new species of giant clam (Bivalvia: Tridacnidae) from Ningaloo Reef, Western Australia. Molluscan Research, 34(3): 201–211.

Shirai S (1994) Pearls & Pearl Oysters of the World. Marine Planning Co., Okinawa, 108 pp.

Tan SK, Ng P & Lim K (2008) Market Place. *In:* Ng PKL, Wang LK & Lim KKP (eds.), Private Lives. An Exposé of Singapore's Mangroves. Raffles Museum of Biodiversity Research, Singapore, pp.191–200.

Taylor J & Strack E (2008) Pearl Production. *In:* Southgate PC & Lucas JS (eds.), The Pearl Oyster. Elsevier B.V., pp. 273–302.

Tookwinas S (1983) Commercial cockle farming in southern Thailand. ICLARM Translations 7. 13 pp. E.W. McCoy, translator (1985).

Wight W (2004) Scallop pearls from Digby, Nova Scotia, Canada. Canadian Gemologist, 25(1): 18–29.